

REMARKS

Claims 1 – 19 are now pending in the application. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the amendments and remarks contained herein.

REJECTION UNDER 35 U.S.C. § 112

Claim 15 stands rejected under 35 U.S.C. § 112 as failing to particularly point out and distinctly claim the subject-matter which applicants regard as their invention. The Examiner has specifically noted that there is sufficient antecedent basis for "said look-up table" in claim 15, line 2 and that claim 15 incorrectly depends from itself.

Claim 15 has been amended herein to depend from claim 14, which provides proper antecedent basis for "said look-up table". Therefore, reconsideration and withdrawal of the rejection are respectfully requested.

REJECTION UNDER 35 U.S.C. § 102

Claims 1, 2, 7, 8 and 13 – 15 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Jankovic et al. (U.S. Pat. No. 6,584,392). This rejection is respectfully traversed.

Claim 1, 7 and 13 include calculating a desired air-per-cylinder (APC) based on a torque command, determining an effective throttle area corresponding to the desired APC independent of a mass air flow and a manifold absolute pressure and based on a non-dimensionalized model and regulating a throttle based on the effective throttle area. Jankovic fails to teach or suggest determining an effective throttle area corresponding to

the desired APC independent of a mass air flow and a manifold absolute pressure and based on a non-dimensionalized model.

The present invention implements a non-dimensionalized model that provides a normalized model to eliminates the effects of ambient pressure and temperature. This enables a single model (e.g., $\text{Area} = f(\text{APC}, \text{RPM}, T_{\text{AMB}}, P_{\text{AMB}})$) that is valid for any ambient conditions. In this manner, the development of multiple models for varying ambient conditions is avoided, which would increase cost and development time and would also increase the size of the model. In a de-normalizing process, the ambient conditions are used to compute the final throttle area. In this manner, the dynamic torque response is improved because the APC is directly mapped to the steady-state throttle area. Further, the non-dimensionalized model enables the effective throttle area to be determined independent of a mass air flow and a manifold absolute pressure (see Paragraph [0030]). In this manner, diagnostic requirements are reduced.

Jankovic discloses a torque-based system for controlling the power output of an engine. The system determines a commanded throttle position (TP_command) based on a pedal position (PPS) and a vehicle speed (VS) (see Figure 2, block 200 and Col. 4, Lines 38 – 45). More specifically, the system determines a desired wheel torque (Tq_w_des) based on PPS and VS and subsequently determines a desired engine torque (Tq_eng_des) based on a multiplication factor (see Col. 4, Lines 46 – 54). TP_command is determined based on Tq_eng_des, a throttle position signal (TPS), a manifold absolute pressure (MAP) and/or a mass air flow (MAF). Therefore, Jankovic fails to teach or suggest determining an effective throttle area corresponding to the desired APC independent of a mass air flow and a manifold absolute pressure and

based on a non-dimensionalized model. Accordingly, reconsideration and withdrawal of the rejections are respectfully requested.

With regard to claims 2, 8, 14 and 15, Applicants note that each ultimately depends from one of claims 1, 7 and 13, which define over the prior art, as discussed in detail above. Therefore, for at least the reasons stated above with respect to claims 1, 7 and 13, claims 2, 8, 14 and 15 also define over the prior art and reconsideration and withdrawal of the rejections are respectfully requested.

REJECTION UNDER 35 U.S.C. § 103

Claims 3, 9 and 16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Jankovic et al. (U.S. Pat. No. 6,584,392) in view of Southern et al. (U.S. Pat. No. 5,606,951). This rejection is respectfully traversed.

Each of claims 3, 9 and 16 ultimately depend from one of claims 1, 7 and 13, which define over the prior art, as discussed in detail above. Therefore, claims 3, 9 and 16 also define over the prior art for at least the reasons stated above with respect to claims 1, 7 and 13. Accordingly, reconsideration and withdrawal of the rejections are respectfully requested.

Claims 4 – 6, 10 – 12 and 17 – 19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Jankovic et al. (U.S. Pat. No. 6,584,392). This rejection is respectfully traversed.

Each of claims 3, 9 and 16 ultimately depend from one of claims 1, 7 and 13, which define over the prior art, as discussed in detail above. Therefore, claims 3, 9 and 16 also define over the prior art for at least the reasons stated above with respect to

claims 1, 7 and 13. Accordingly, reconsideration and withdrawal of the rejections are respectfully requested.

DOUBLE PATENTING

Claims 1 – 19 stand provisionally rejected under the judicially created doctrine of double patenting in view of the claims of co-pending U.S. Patent Application Serial No. 10/644,346. The Examiner has noted that the subject-matter claimed in the present application is fully disclosed in the referenced co-pending application and would be covered by any patent granted on the co-pending application since the referenced co-pending application and the present application are claiming common subject-matter.

Applicants respectfully note that the co-pending application and the present application are not claiming common subject-matter. More specifically, claims 1, 7 and 13 of the present application, as amended herein, include calculating a desired air-per-cylinder (APC) based on a torque command, determining an effective throttle area corresponding to the desired APC independent of a mass air flow and a manifold absolute pressure and based on a non-dimensionalized model and regulating a throttle based on the effective throttle area. The claims of the co-pending application, as amended in the most recently filed amendment, include determining an actuator variable based on a mass airflow into an intake manifold of the engine, which is determined using an engine shaping filter and an engine noise rejection filter. Therefore, the present application and the co-pending application do not claim common subject-matter.

Serial No. 10/664,326

Page 10 of 11

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (313) 665-4969.

If for some reason any fee needs to be paid please charge to Deposit Account No. 07-0960.

Respectfully submitted,

Dated: 5-19-05

By: 

Christopher Devries
Reg. No. 44,654

GENERAL MOTORS CORPORATION
Legal Staff
Mail Code 482-C23-B21
P.O. Box 300
Detroit, MI 48265-3000

Serial No. 10/664,326

Page 11 of 11

BEST AVAILABLE COPY